

**FORMULAE FOR ASBESTOS-CONTAINING FIREPROOFING,
ACOUSTICAL PLASTER AND SURFACE TEXTURE
PRODUCTS MANUFACTURED BY GRACE AND/OR ZONOLITE**

The following are formulae for W.R. Grace & Co.-Conn. and Zonolite Company asbestos-containing acoustical plaster, surface texture and fireproofing products.

**Zonolite Acoustical Plastic (Standard)
(a/k/a Vermiculite Acoustical Plastic/Plaster)**

Vermiculite (60-70%)
Bentonite (montmorillonite type) (15-19%)
Asbestos (15-19%)
Sodium Lauryl Sulfate (<1%)

**Zonolite Acoustical Plastic (Bermuda Tan)
(a/k/a Vermiculite Acoustical Plastic/Plaster)**

Vermiculite (56-64%)
Bentonite (montmorillonite type) (16-20%)
Asbestos (16-20%)
Sodium Lauryl Sulfate (<1%)
Dowicide (<1%)
Sodium Nitrate (<1%)

Board of Education Hard Texture

Perlite (40-48%)
Bentonite (montmorillonite type) (23-27%)
Titanium Dioxide (13-15%)
Asbestos (9-12%)
North Carolina Clay (2-4%)
ZOD Concentrate (2-3%)
Calcium Carbonate (1-2%)
Sodium Lauryl Sulfate (<1%)
Fungicide (<.5%)

Board of Education Texture

Perlite (41-49%)
Bentonite (montmorillonite type) (23-27%)
Titanium Dioxide (13-15%)
Asbestos (9-12%)
North Carolina Clay (2-3%)
Calcium Carbonate (1-2%)
Sodium Lauryl Sulfate (<1%)
Fungicide (<.5%)



Ari-Zonolite Board Texture

This product was manufactured by the Ari-Zonolite Company for a two or three year period in the early 1960's. Grace believes the product contained approximately 10% commercial asbestos, but has no formula documents. The investigation is continuing.

Econo-White 65 and Econo-White 70
(a/k/a Econo-White Acoustical
Texture and Econo-White Super White)

Perlite (60-70%)
Bentonite (montmorillonite type) (13-17%)
Asbestos (13-17%)
Titanium Dioxide (2-8%)
Sodium Lauryl Sulfate (<1%)

Zonolite Finish Coat (Decorator's White)
(a/k/a Zonolite Acoustical Finish)

Vermiculite (63-72%)
Bentonite (montmorillonite type) (11-15%)
Asbestos (11-14%)
Titanium Dioxide (5-7%)
Sodium Lauryl Sulfate (<.5%)

Zonolite Finish Coat (Decorator's White) (Extra Hard)

Vermiculite (61-69%)
Bentonite (montmorillonite type) (12-14%)
Asbestos (11-14%)
Titanium Dioxide (5-7%)
Sodium Lauryl Sulfate (2-3%)

Hi Sorb Acoustical Plaster
XX White HiSorb

South African Vermiculite (20-32%)
Perlite (4-13%)
Plaster of Paris (50-60%)
Asbestos (8-10%)
Bentonite (1.5-2.5%)
Cal. Concentrate (2.3%)
Titanium (1.5-2.5%)
Drywall Additive (<3%)

Oyster White HiSorb

South African Vermiculite (18-27%)
Vermiculite (10-13%)

Plaster of Paris (50-60%)
Asbestos (8-10%)
Bentonite (1.5-2.5%)
Cal. Concentrate (1.8-2.5%)
Drywall Additive (<3%)

Hi Temp Insulating Cement
(a/k/a Zonolite High Temperature Cement,
Zonolite Hi-Temperature Cement,
Zonolite High Temperature Insulating Cement)

Vermiculite (60-70%)
Bentonite (montmorillonite Type) (15-19%)
Asbestos (15-19%)
Orvus Neutral Granule (<1%)

Zonolite Mono-Kote (MK-1)

Vermiculite (40-45%)
Plaster of Paris (33-37%)
Asbestos (10-13%)
Portland Cement (7-9%)
ZOD Concentrate (1-2%)

Spra-Insulation (MK-2)

Vermiculite (41-46%)
Plaster of Paris (33-37%)
Asbestos (10-13%)
White Portland Cement (6-9%)
ZOD Concentrate (1-2%)

Zonolite Mono-Kote MK-3

Plaster of Paris (55-59%)
Vermiculite (28-32%)
Asbestos (10-14%)
Sodium Lauryl Sulfate (<1%)

Perltex Super-40 Fog
(a/k/a Perltex Fog)

Whiting (75-86%)
Talc (6-8%)
Asbestos (4-7%)
Staramic (3-5%)
Titanium Dioxide (1-2%)
Dowicil (<1%)
Methocel (<1%)
NTA (<1%)
Daxad-17 (<1%)

Ultramarine Blue (<.5%)

In two formula documents, one undated and one dated March 14, 1972, talc, titanium dioxide, Daxad 17 and ultramarine blue were eliminated from the above formula and replaced with lithopone (6-9%), casein (1-2%), TSP (<1%) and sodium nitrite (<.5%).

Perltex Spray Surfacers
(a/k/a PlasterTex, Perltex Super-40
Spray Surfacers, and Perltex Super-40)
and Gun Coat Spray Surfacers)

Whiting (11-40%)
Sodium Nitrate (<1%)
Lithopone (5-25%)
Casein (2.5-11%)
Mica XX (7-10%)
Pryprophyllite (3-8%)
Soya Flour (0.5-4%)
Asbestos (6-13%)
Kalloid Clay (5-12%)
Tri Sodium Phosphate (0.5-4%)
KA 47 Titanium (0.5-4%)
Mica AA (7-16%)
Snow Flake Lime (<1%)
Dowicide G (<1%)
Calcium Sterate (<1%)
Perlite (4-18%)

Perltex Super-40 Perlite
(a/k/a Perltex Perlite and Super-40 Perlite)

Whiting (65-75%)
Perlite Aggregate (7-11%)
Asbestos (6-8%)
Lithopone (5-9%)
Staramic (4-6%)
Casein (1-2%)
Methocel (<1%)
Trisodium Phosphate (<1%)
Dowicil (<.5%)
Sodium Nitrite (<.5%)
NTA (<.5%)

Perltex Super-40 Polycoarse
(a/k/a Perltex Polycoarse,
Perltex Super-40 Poly and Perltex Poly)

Whiting (64-74%)
Talc (14-16%)

Asbestos (4-6%)
Staramic (4-5%)
Lithopone (3-4%)
Methocel (1-2%)
Polystyrene Aggregate (1-2%)
NTA (<1%)
Dowicil (<.5%)
Daxad-17 (<.5%)
Ultramarine Blue (<.5%)

Two formula documents, one undated and one dated March 14, 1972, set forth the following formula for Super 40 Poly:

Whiting (38-42%)
Talc (38-42%)
Asbestos (1-2%)
Lithopone (11-15%)
Methocel (<1%)
Poly Beads (1-3%)
NTA (<1%)
Dowicil (<1%)
Casein (1-2%)
TSP (<1%)
Kalloid Clay (1-2%)
Natrosol (<1%)

Peritex Super-40 SAV

Whiting (67-77%)
SAV Aggragate (6-8%)
Lithopone (6-8%)
Asbestos (5-7%)
Staramic (4-6%)
Casein (1-2%)
Trisodium Phosphate (<1%)
Methocel (<1%)
NTA (<1%)
Sodium Nitrite (<.5%)
Dowicil (<.5%)

Zonolite Spra-Tex (Regular)

Kaolin Clay (31-35%)
Asbestos (30-36%)
Titanium Dioxide (15-17%)
Vermiculite (14-19%)
Sodium Lauryl Sulfate (<1%)

Zonolite Spra-Tex EH (Extra Hard)

Kaolin Clay (30-34%)
ASbestos (29-35%)
Vermiculite (14-19%)
Titanium Dioxide (15-17%)
ZOD Concentrate (2-4%)
Sodium Lauryl Sulfate (<1%)

Spra-Wyt
(a/k/a Spra-Wyt Finish, Spra-Whyt
Acoustical, and Spra-Wyt Acoustical Finish)

Perlite (50-60%)
Bentonite (montmorillonite type) (16-20%)
Asbestos (16-20%)
Titanox RA-50 (4-5%)
Double Hydrate Lime (4-5%)
Duponol WA Dry (<.5%)
Dowicide "6" (<.5%)

Versakote (Prep Coat #4)

White Portland Cement (38-42%)
Whiting (26-30%)
Hydrated Lime (11-13%)
Perlite Aggregate (6-10%)
Asbestos (5-7%)
Titanium Dioxide (2-3%)
Aluminum Hydrate (1-3%)
Aluminum Stearate (<1%)
Gelvitol (<1%)
Hamaco (<1%)
Daxad-17 (<1%)
Darex Set Accel. (<1%)
Nopco PD-1 (<1%)
Dowicil (<.5%)

Z-TEX
(a/k/a EZ-TEX)

Plaster of Paris (40-50%)
Vermiculite (24-28%)
Asbestos (13-17%)
White Cement (11-13%)
ZOD Concentrate (<.5%)
Retarder (<.5%)
Dowicide (<.5%)

Zono-Coustic 1

Vermiculite (75-85%)
Asbestos (11-14%)

Plaster of Paris (5-8%)

Zono-Coustic 2

Vermiculite (41-46%)
Plaster of Paris (33-37%)
Asbestos (10-13%)
White Portland Cement (6-9%)
ZOD Concentrate (1-2%)

Zono-Coustic 3

Plaster of Paris (35-39%)
Vermiculite (34-38%)
Asbestos (11-14%)
Hydrated Lime (8-11%)
Titanium Dioxide (3-4%)
Sodium Lauryl Sulfate (<1%)

Zono-Coustic Z

Vermiculite (38-42%)
Plaster of Paris (34-38%)
Asbestos (11-14%)
Portland Cement (7-9%)
Sodium Lauryl Sulfate (<1%)

Perlcoustic

Perlite (53-61%)
7 M Asbestos (15-17%)
Solka-Floc BW-20 (4.5-5.5%)
Bentonite (19-21%)
Sodium Nitrite (<1%)
Dowicide G (<1%)
Naconal DB Beads (<1%)

Perltex Prep Coat #3

White Cement (40-44%)
Asbestos (4-5%)
Calcium Carbonate (18-20%)
Vermiculite (10.5-11.5%)
Finish Lime Double
Hydrated (10.5-11.5%)
Perlite (10.5-11.5%)

Prep Coat #5 (Puerto Rico)

White Portland Cement (38-42%)

Whiting (14-19%)
Hydrated Lime (11-13%)
Asbestos (5-7%)
Vermiculite (18-22%)
Perlite Aggregate (7-11%)

Satin White

Vermiculite (46-53%)
Bentonite (6-9%)
Asbestos (13-17%)
Whiting (20-24%)
Titanium Dioxide (1-2%)
Satin White Concentrate (2-5%)
MBS 40 (<.5%)

Ari-Zonolite Natural

Vermiculite (55-60%)
Asbestos (15-19%)
Bentonite (15-19%)
Duponol (<.5%)
Sodium Nitrate (<1%)
Plaster of Paris (6-9%)

Ari-Zonolite Oyster White

Vermiculite (38-42%)
Asbestos (28-32%)
Bentonite (10-14%)
Duponol (<1%)
Titanium (4-8%)
Perlite (10-13%)

Ari-Zonolite Nu-White

Asbestos (41-46%)
Bentonite (9-13%)
Plaster of Paris (4-7%)
Perlite (36-41%)
Duponol (<1%)
Elvalol (<1%)

Zonolite Finishing Cement

Asbestos (21-26%)
Bentonite (3-5%)
Plaster of Paris (42-50%)
Vermiculite (22-27%)
Gypsum Retarder (<.5%)

**Example
Wrong Components**

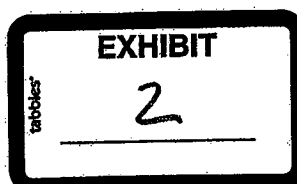
<i>Grace Formula</i>	<i>Claim Document Sample Results</i>
Zonolite Mono-Kote MK-3	
Plaster of Paris (gypsum) 55-59%	No Data Provided
Vermiculite 28-32%	No Data Provided
Chrysotile Asbestos 10-14%	Chrysotile Asbestos 5%
Sodium Lauryl Sulfate <1%	Amosite Asbestos 5%

**Example
Wrong Components**

<i>Grace Formula</i>	<i>Claim Document Sample Results</i>
Zonolite Mono-Kote MK-3	
Plaster of Paris (gypsum) 55-59%	CaCO 60%
Vermiculite 28-32%	Mica (vermiculite) 3%
Chrysotile Asbestos 10-14%	Chrysotile Asbestos 3%
Sodium Lauryl Sulfate <1%	Quartz 2%
	Cellulose 2%

**Example
Wrong Components**

<i>Grace Formula</i>	<i>Claim Document Sample Results</i>
Zonolite Acoustical Plastic (Standard)	
Vermiculite 60-70%	Misc. Material 54%
Bentonite 15-19%	Mineral Wool 15%
Chrysotile Asbestos 15-19%	Chrysotile Asbestos 10%
Sodium Lauryl Sulfate <1%	Amosite Asbestos 20%



**Example
Insufficient Data**

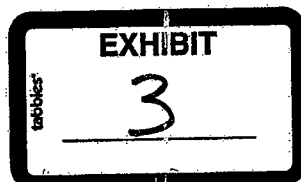
<i>Grace Formula</i>	<i>Claim Document Sample Results</i>
Zonolite Mono-Kote MK-3	
Plaster of Paris (gypsum) 55-59%	No Data Provided
Vermiculite 28-32%	No Data Provided
Chrysotile Asbestos 10-14%	Chrysotile Asbestos 5%
Sodium Lauryl Sulfate <1%	

**Example
Insufficient Data**

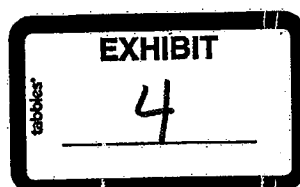
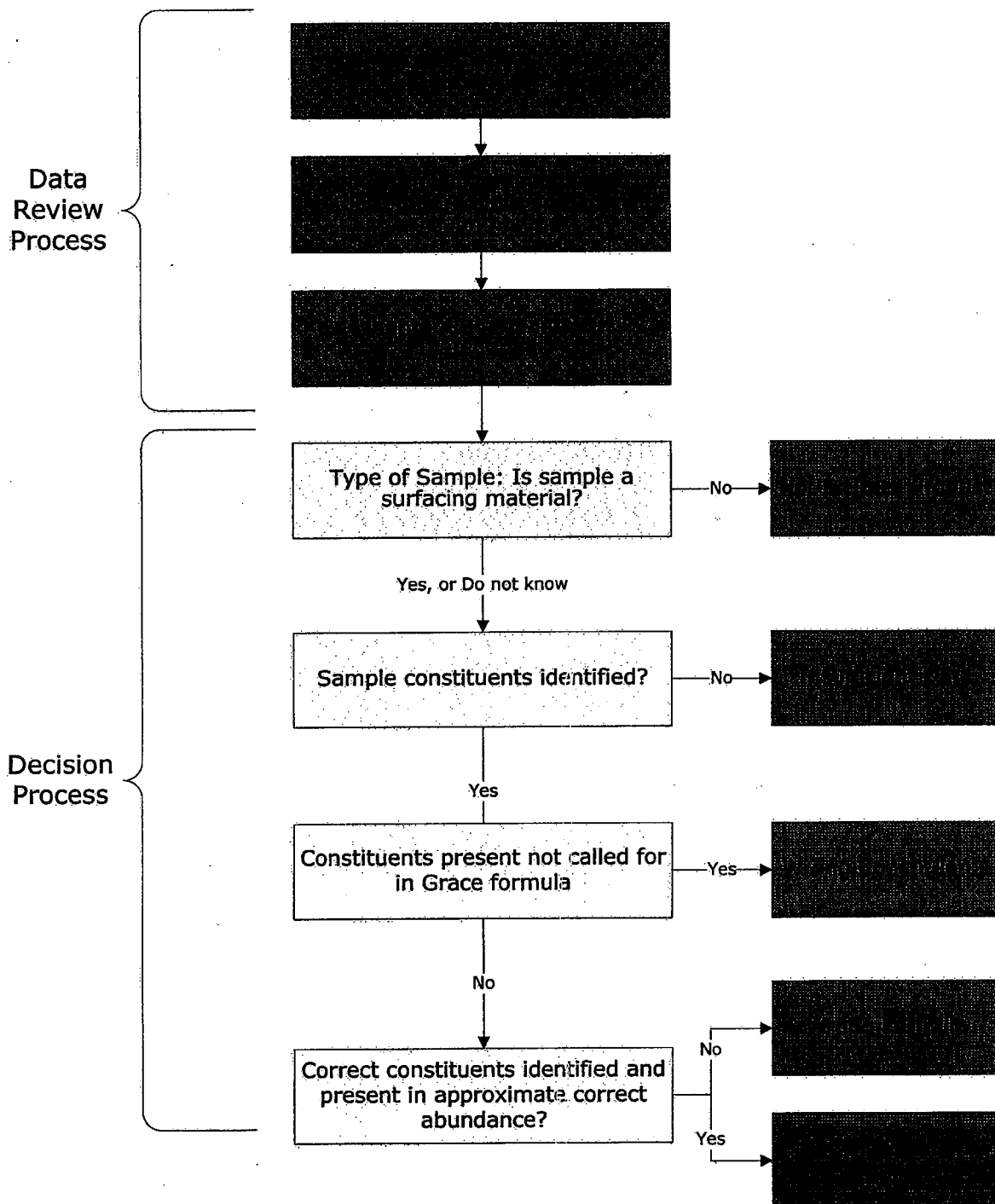
<i>Grace Formula</i>	<i>Claim Document Sample Results</i>
Zonolite Mono-Kote MK-3	
Plaster of Paris (gypsum) 55-59%	Nonfibrous material 90%
Vermiculite 28-32%	
Chrysotile Asbestos 10-14%	Chrysotile Asbestos 10%
Sodium Lauryl Sulfate <1%	

**Example
Insufficient Data**

<i>Grace Formula</i>	<i>Claim Document Sample Results</i>
Zonolite Mono-Kote MK-3	
Plaster of Paris (gypsum) 55-59%	"Binder" 80%
Vermiculite 28-32%	
Chrysotile Asbestos 10-14%	Chrysotile Asbestos 15%
Sodium Lauryl Sulfate <1%	



Product ID Claims Document Review Process



Claim Number	10648	12396	12476
Last Name	State of California	Carleton University	City of Vancouver
First Name	Dept. of General Serv.		
Address	28 Civic Center Plaza	1125 Colonel By Drive	G.E. And Playhouse Theatres 646-605 Cambie
City	Santa Ana	Ottawa	Vancouver
State	CA	ON	BC
Building Type (Question 5)	O	O	O
Building Description (Question 6)	Office	University	Theatre
Date Claim Received	3/31/2003	3/31/2003	3/31/2003
Claimed Products (Question 13)	MK-3	Surface Treatment	Zonolite Acoustical Plaster
Lab Report Date	07/30/06	10/06/06	3/13/06
Laboratory	GSA Asbestos Survey	Protein & Associates Ltd.	Materials Analytical Services, WC

Wollastonite			
Perlite			
Vermiculite			72
Undefined Asbestos			
Anthophyllite			
Tremolite			
Crocidolite			
Actinolite			
Amosite			
Chrysotile	10	10-25	14
Other Minerals			
Supporting Material			
other materials (no percentage)			
other			
Opaques			
Minerals			
talc			
Paint			
Synthetic			
Glass			
Non-Asbestos Fibrous			
Paper Fiber			
Glass Wool			
Wool/Glass Wool			
Wood Fiber			
Synthetic Fiber/Polymers			
Fibrous Glass			
Mineral Wool		25-50	
Cellulose			
Filler			
Matrix			
Binding Materials			
Particulate			
Non-Fibrous		25-50	
Misc. Materials			
Sand Grains			
Silicates			
Quartz			
Silica			
Mortar/Plaster			
cementitious			
Gypsum			
CaCO ₃			
Binders: CaCO ₃ /CaSO ₄			
Calcite/Calcite Binders			
Carbonate Binders			
Calcite			
Mica			

Reason for Conclusion	Only asbestos reported	contains mineral wool	Supporting Data Provided
Gross Description (Visual Ins)	Homogeneous, gray fibrous material	100% Fibrous	Ten. Flakes and books as well as fiber bundle
Sample Description	Acoustical (Sprayed)	2nd Floor Sprayed Ceiling Material	Texture Coat
Sample Type	spray-applied	spray-applied	spray-applied
Lab Sample ID	B24-M6-R20-S3	2-11	M33270-002
Number containing Asbestos	28	8	1
Number of Samples	47	16	1

EXHIBIT

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tabbies

Supporting Material			
other	15	20	
Non-Asbestos Fibrous			
Wood Fiber			
Synthetic Fiber/Polymer			
Fibrous Glass			
Mineral Wool	30		
Cellulose	10		
Binding Materials			
Particulate			
Non-Fibrous		60-80	
Quartz			
cementitious			
Gypsum			
Carbonate Binder			
Mica	80		
Perlite			
Vermiculite			
Undefined Asbestos			
Anthophyllite			
Tremolite			
Crocidolite			
Actinolite			
Amosite			
Chrysotile	45	20	20-40
Wetted Formula			
Wetted Formula			
Insufficient Data			
Not Insufficient Data			
Not Insufficient Data			
Sample Type	mud/compd./tape	spray-applied	possible
Lab Sample ID	12780 3	12780 4	12780 2300
Claim Number	12780	12780	12780



.. PART 3: PROPERTY INFORMATION
26718. (ATTACHED)

A. ENVIROMENTAL PROPERTY AUDITS 4-24-01

B. TWIN CITY TESTING 1-03-85

C. UNIVERSITY OF MINNESOTA MAY 1984

ENVIRONMENTAL PROPERTY AUDITS, INC.

2701 4th Avenue N, Anoka, MN 55303
 Phone: 763.323.6700
 Fax: 763.323.6677

EPA, INC.

www.epaconsultant.com



Health & Safety
 Consultants

April 24, 2001

FILE

Mr. Daryl Schutte
 First Presbyterian Church
 Dawson, MN 56232

Dear Mr. Schutte:

Enclosed is the laboratory report for the materials collected for asbestos content analysis from the duct insulation at First Presbyterian Church in Dawson, MN. As indicated in the report, there was asbestos found in the following materials as collected by Environmental Property Audits, Inc. (EPA, Inc.) personnel.

SAMPLE #	LOCATION	DESCRIPTION	TYPE
3	Boiler room	Mudded duct seam	45% Chrysotile
4	Ceiling	Sprayed on texture	20% Chrysotile

The on-site material sampling and survey was conducted by a federally accredited asbestos inspector in accordance with the OSHA 1926.1101, Asbestos Standards and the State of Minnesota, Department of Health Asbestos Regulations, part 4620.3460. The laboratory analysis was performed in accordance with current U.S. Environmental Protection Agency (USEPA) protocols, "Method for the Determination of Asbestos in Bulk Materials," EPA 600/R-93/116, 1993.

If there are any questions concerning this project, please call our office at (763) 323-6700. Thank you for choosing EPA, Inc. for your asbestos concerns and I look forward to assisting you on future projects.

Sincerely,

Jim Lindahl
 President

JL:cap

Enclosure: Laboratory Data
 Inspector Accreditation
 Invoice

EMSL Analytical, Inc.14375 23rd Avenue North
Minneapolis, MN 55447

Phone: (763) 449-4922 Fax: (763) 449-4924

EMSLAttn.: Jim Lindahl
EPA, Inc.
2701 4th Avenue North
Anoka, MN 55303

Monday, April 23, 2001

Ref Number: MN01752

POLARIZED LIGHT MICROSCOPY (PLM)

Performed by EPA 600/R-93/116 Method*

Project: 1st Presbyterian - Dawson

Sample	Location	Appearance	Sample Treatment	ASBESTOS		NON-ASBESTOS	
				%	Type	% Fibrous	% Non-Fibrous
1	Taped duct seam insulation	Cream/Yellow Fibrous Heterogeneous	Teased/Dissolved	None Detected		80% Min. Wool 15% Cellulose	5% Other
2	Duct insulation	Cream/Yellow Fibrous Heterogeneous	Teased/Dissolved	None Detected		80% Min. Wool 15% Cellulose	5% Other
3	Mudded duct seam	Tan/Grey Fibrous Heterogeneous	Teased/Dissolved	45% Chrysotile		30% Min. Wool 10% Cellulose	15% Other
4	Sprayed on ceiling texture	Gray/Gold Fibrous Homogeneous	Teased/Dissolved	20% Chrysotile		None Detected	60% Mica 20% Other

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "N of Layers" refers to number of separable subsamples.

* NY samples analyzed by ELAP 198.1 Method.

Daria Gordhamer
Daria Gordhamer
Analyst

Reuel Sims
Approved
Signatory

Disclaimer: PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. EMSL suggests that samples reported on <1% or none detected be tested with either SEM or TEM. The above test report relates only to the fibers tested. This report may not be reproduced, except in full, without written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP or any agency of the United States Government. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples.

Fax: 612-449-4924



ANALYTICAL

MND1752
CHAIN OF CUSTODY

ASBESTOS

[illegible]